Acceleration creates rapid reward: Faster construction practices improve work-zone safety and are preferred by motorists

By Jim Sorenson

If you drove today, chances are you passed through a work zone. With an aging highway infrastructure requiring more maintenance and rehabilitation and the increased investment in infrastructure renewal, hundreds of highway work zones can be found each day in every state across the country. Along with the increased number of work zones, however, comes a potential increase in risk for both highway workers and motorists. To improve work-zone safety, while also increasing mobility, some state highway agencies are turning to accelerated construction practices. These practices are directed towards reducing the time work zones are in place and extending the period between rehabilitation cycles by improving the durability and effective life of the pavement restoration.

To accelerate construction and keep workers and motorists safer at the same time, highway agencies are using unconventional initiatives such as closing roads completely to traffic to allow the necessary maintenance or rehabilitation work to be done. For example, the Washington State Department of Transportation shut down three intersections on U.S. 395 in Kennewick last fall to completely reconstruct them. The roads were closed at 7:00 p.m. on a Thursday and were required to be reopened by 6:00 a.m. on Monday. In each

case, the contractor, Inland Asphalt, completed the work ahead of schedule and the roads were back in service by Sunday evening. The intersections were reconstructed with a high early-strength portland cement concrete mix that allowed the roads to be opened to traffic within about 12 hours.

A critical part of this project planning was keeping area residents and businesses informed about the reconstruction plans and letting motorists know about alternate routes. The DOT contacted local business owners prior to the construction work to explain the reconstruction process. Media coverage also began a week before the road closures, which allowed the driving public time to prepare for using detour routes.

The California DOT also stepped out of the box in 1999 when it closed two lanes of a four-lane eastbound stretch of I-10 near Pomona for a 55-hour period over one weekend. During the weekend closure, workers replaced a 1.7-mile section with fast-track concrete. The reconstruction project was studied by the Innovative Pavement Research Foundation (IPRF), American Concrete Pavement Association and researchers from the University of California at Berkeley. According to an IPRF report released in May of this year, the I-10 performance demonstrates that “state agencies can be confident that the reconstruction of 1.7 lane miles of pavement in a weekend is an achievable goal.” The work accomplished by the contractor in the single weekend closure would have taken 17 nights of regular lane closures to complete.

Traffic management was a significant part of the reconstruction process even before work on the road began; the DOT and the contractor made a considerable effort to disseminate information about the project to the local media. As a result, according to IPRF, "total traffic volume on two lanes through the construction zone was reduced to historical levels…total eastbound traffic volume during the weekend closure was 5 to 35% less than typical weekend peak hours."

Accelerated construction techniques such as road closures also are finding increasing success in other parts of the country. The closure of I-405 in Seattle was an unqualified success in 1997, when work was scheduled for three consecutive weekends to mill and repave nearly 6 miles of a four-lane urban interstate. The contractor was able to complete what had been anticipated as a 300-day construction project with virtually no adverse impact on quality and performance.

Accelerated construction was recently selected as a priority technology for implementation by the new American Association of State Highway and Transportation Officials Technology Implementation Group (TIG). The group has chosen Indiana and Pennsylvania as Lead States for the technology and is currently planning to hold two pilot workshops in the spring and summer of 2002. For more information on the TIG activities, contact Haleem Tahir at AASHTO, 301/975-5275; fax: 301/330-1956; e-mail: haleem.tahir@nist.gov.

While accelerated construction is not feasible in every situation, it holds a great deal of potential for many rehabilitation and reconstruction projects. It also has public support. According to a recent FHWA survey, 67% of the public would support a 1-week closure for road work.

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